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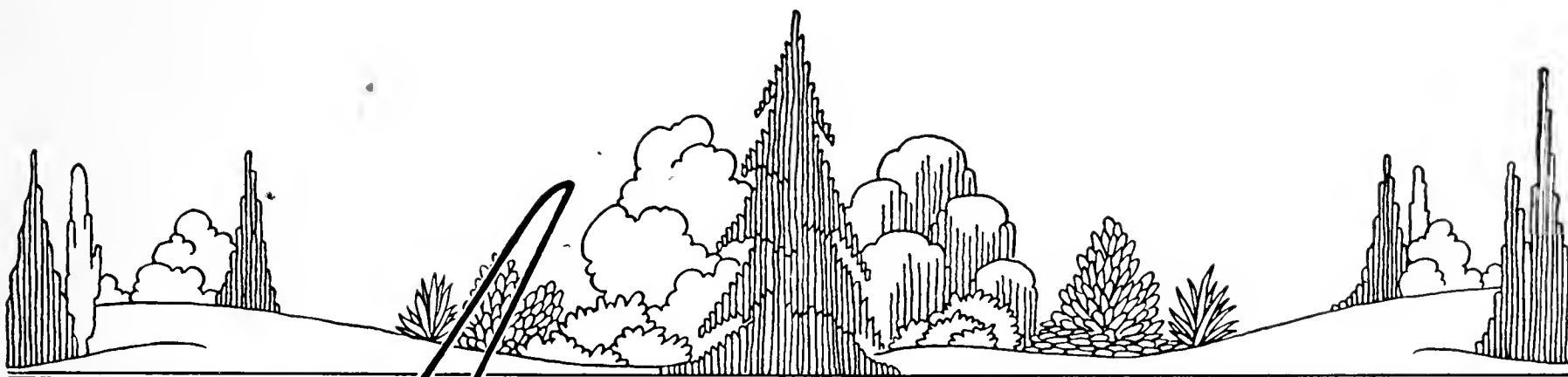
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The Arboretum Bulletin

VOLUME XVI

SUMMER, 1953

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Spanish Journey

JOAN PARRY*

ANYONE familiar with the Western landscape has reason enough to wish for a sight of Spain; that is, if he wants to see, to taste and smell, even to hear at the source much that is still an integral part of the American Southwest. For it is no exaggeration to say that something of Spain is almost everywhere about us in this Western world.

The Spanish padres first brought their methods of planting and irrigation to the Americas; it was they who first taught Californians how to make their deserts fertile land. From Mexico northeast as far as Santa Fe, and due north as far as San Francisco, they left their imprint. It can be seen in the old Spanish missions of southern California and the Spanish-type domestic architecture, tasted in the tortillas and other Spanish dishes, heard in the Spanish place names almost the whole length of the West Coast, and spoken at every mention of that superb ornamental tree, the native madrone, or madrono as the Spaniards first named it.

It follows, therefore, naturally, that Western gardens also show a marked Spanish influence, for however the patio garden may be adapted to present-day American living, we recognize it as essentially Spanish in character and origin. Yet this is but a partial truth, since

the patio in its turn is a blend of the early Greek and Roman tradition which Byzantine and Moslem art later developed and finally crystallized into the classic Spanish patio garden which has no counterpart elsewhere in Europe.

Formerly the patio garden was suitable only for countries similar in climate and character to that of Spain, such as southern California. But the present knowledge of climatic control, outdoor lighting systems, and the use of radiant heat under outdoor terraces has made it a practical possibility in more northern climates, and has moreover allowed a certain further development of the patio-style in its adaptation to American living. Thus in the contemporary houses and gardens of the Northwest there is nothing incongruous in a skillful blend of Spanish and Japanese styles furnished with beautiful Asiatic and native plant material.

Color and simplicity are, I think, the two outstanding characteristics of the patio garden, and the sound of falling water. When I write the word color it is perhaps the scarlet of geraniums, the pastels of petunias, the harsh brilliance of the wooden chip-like petals of zinnias which first come to mind. But when I stop and narrow my mind's eye to memory, the more clearly to see into the distance, I know that green is the favorite and predominant color of those gardens. Green and blue, for blue comes as a close secondary theme.

*Miss Joan Parry, English author and lecturer on garden topics, has contributed much to American periodicals during her stay in the United States. We are happy to here present one of her interesting articles in the Bulletin.

In an arid country, green becomes as precious a commodity as water, which is no doubt the reason why Spain more than any other country has expressed that color, especially in textiles, so superbly well. The Spanish artist El Greco has used green in his cloaks and draperies more than any other painter I can name.

The Moorish love of blue is reflected in the wide plantings of purple-blue iris, the intense turquoise of tiles, and the azure blue pots on the balconies under the wide and incredibly blue sky above.

There may be the strident scarlets of pomegranate and pelargonium down to deep carmine in the rose; apricot and gold of orange trees; the ochre-red earth beneath the olive groves; great splashes of purple *Bougainvillea* and morning glory, pale lavender of *Wisteria* and misty blue of *Plumbago*, to the deep violet of fragrant heliotrope. But whatever it may be, whether scarlet or carmine, violet or blue, apricot or gold, always it is seen against a greater green: the yellow green of lemon trees, dark shining green of southern magnolia leaves and the black green of sharp-pointed cypress trees, or the quiet, aromatic green of myrtle and box.

Even where a garden is drained of all color except green there is still nothing sad or sombre there, since the green is perfect back-stage setting to the play of water, and in a true Spanish garden there is always the sound and sight of rising and falling water.

Water is the very genius of the patio garden. I have sometimes thought that this abundant use of water is sadly lacking in the gardens of southern California; something of the essential character of the patio is missing where there is no fountain. In Northwestern gardens this feature is often missing too, but that is understandable since you are often within sight of lake or Sound.

As for simplicity, this is well reflected in the Spanish choice of garden accessories. Stone or marble benches, often set in the walls and so part of the architectural scheme, are perfectly plain. Hand-rails and stairways, terraces and retaining walls, are all extremely simple both

in material and design. So, too, are the balconies on house walls, framework and boundary both to those gay geranium and carnation-growing sky gardens. There are few ornate jars or vases but plain glazed azure or everyday brick-red flowerpots. There is little topiary, trees and shrubs for the most part being cut straight across and down geometrically to form simple, symmetrical arches and walls, and these where freshly cut seem to have the texture and color of emerald velvet.

In the traditional gardens of Moorish heritage there is no statuary; the water flows in plain round basins, or courses along narrow channels to the patio pools which mirror the pavilions and the pot plants arranged alongside in straight rows. There are, however, to my mind some unhappy exceptions in the gardens of a later date as well as some ancient gardens which have been in part altered to suit later and less pleasing taste.

Solemn, religion-haunted Philip II kept his garden at El Escorial with the same compelling austerity as his monastery Palace, allowing no ornament among the severely designed box parterres other than the green shaped balls placed at intervals along the green hedges, thus repeating in box the same stone balls which were the only ornaments permitted to mark the stonework of the Palace itself.

He let his fancy run more freely at Aranjuez, the favorite residence of successive kings and queens of Spain. There are fountains within the series of box parterres in his Jardin de la Isla which is much as he left it, except today the surrounding trees have grown so tall that it is more a dense woodland than an open garden.

His successors' taste in statuary, however, ran riot. Philip V, the first Bourbon, no doubt had the memory of Versailles in mind, and is responsible for the grotesque furies seen among the animals and humans in the series of interlacing curves and fountain basins in the garden surrounding the south front of that Palace.

So I would forget the fountains of Aranjuez, and remember instead the long lines of

the great southern magnolias and the superb avenues of planes, reputed, together with the elm and poplar trees, to grow more magnificently there than elsewhere in the world.

La Granja, another royal Palace, has its fountains—many fountains. But here again the waters which rise and fall against long avenues of trees and dark blue mountain background spring from the mouths of rearing, snorting horses and other fantasies in bronze. I would forego all these, even the eleven waterfalls cascading down the marble stairway, if I could stand in Segovia, seven miles away, from where they say you may see the highest fountain in Europe, the Jet of la Fama, rise to its full hundred and fifteen foot plume of water in the evening sky.

It was a relief to come finally to what is freely and unchallengingly acknowledged to be Spain's most beautiful traditional garden, that of the Generalife at Granada. If you wish to see but one Spanish garden this is the garden you should see. If you want to see many gardens then you should come here last of all. Nor should you hurry, but stay, as we stayed, at the Paradores San Francisco, the old convent now run as a government hotel, set within the Palace of the Alhambra itself. From there, as you sit on the long, wide terrace under the shade of pomegranate and fig trees, the fragrance of white jasmine everywhere about you, look across the narrow gorge for your first view of the Generalife, and see it high on a promontory above the valley among the tall, dark cypresses.

Think there on the terrace, for a moment, that this summer villa of Moorish kings dates from the first quarter of the fourteenth century; that this—one of the world's most beautiful gardens—was created long before Le Notre designed Versailles or Cardinal Wolsey first started to plant at Hampton Court; before the New World revealed its great wealth of natural flora to the continent of Europe. Know before you enter that the Spanish composer de Falla loved this place, with which he was closely associated. Indeed, it has been truly said, that this garden comes nearer to music than any of the other arts.

All who come here must have their individual reaction at first sight of such a place. For some it may be the untrammelled sense of the spirit of water in a garden which the Generalife here affords; for another a realization that this one view alone is worth a long journey. I would say that to come and go blindfolded and have but this one sight would still suffice.

Here is no statuary; no gods nor goddesses, no deer nor fauns to distract from the interplay of the water itself. In the main court slender arching sprays rise from an avenue of tiny jets to fall in the center channel which runs the entire length of the patio, connecting the two miradors at either end. Elsewhere, wide shallow basins in the plain, fluted form of an open lotus flower receive the water that rises from the bud jets or courses down the open runnels of stairway balustrades.

You should stand at sundown and watch from first one and then another of the arched window openings of the Sultan's mirador, until the color ebbs from the red bastioned walls and towers of the Alhambra and the glare recedes from the white cave dwellings on the Albaicin Hill across the narrow valley of the Darro, until the guarding mountains of that western pass become lost in mist and the lights of the city of Granada appear here and there from down below you.

There is nothing, not a word, of those other sights and sounds on this Spanish Journey. Nothing of the gardens of the Alhambra, of the Alcazar or Court of Oranges in Seville; nothing of the bullfight and the gypsies' dance to the castanets and the guitar; nothing of the sheep bells that come up from the valley as the sound of running water in the gathering dusk; nothing of the mesas and the wide tawny landscape so reminiscent of America's Southwest, nor of the pink oleanders in the dry river bed below the Sierra Madrona pass, nor the village of Santa Fe and the wild figs we gathered in their yellow-green ripeness along the roadside. Nor do you hear the light patter of burro feet on cobbled stones, nor see the walled city of Avila and the storks' nests

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John and William Bartram

America's Greatest Plant Hunters

MRS. O. B. THORGRIMSON*

IN the city of Philadelphia there is today a small park of about five acres, situated on and lying above the Schuylkill River. In this tract stands a stone house, the home of the first great American botanist and founder of the first Botanic Garden in America.

John Bartram was born March, 1699, the grandson of an earlier John Bartram who came to this country with William Penn and settled with his Quaker brethren in the beautiful country they named Pennsylvania. John, like his father, was a farmer all his life and partially dependent on his farm for the support of his family. Nevertheless he rose to be, in the opinion of Linnaeus, "the greatest natural botanist in the world."

His early education was that which the country schools of that time afforded, barely learning to read and write. But such was his native intelligence that, when he became interested in horticulture, he acquired sufficient knowledge of Latin to use that language in his descriptions and the naming of the many plants he discovered and introduced into cultivation.

At the age of thirty he had sufficient property inherited from his father and uncle to purchase a five-acre tract, three miles outside the city of Philadelphia, whose soil and exposure was well adapted to the growing of all kinds of plants of the temperate zone, and which eventually became the first Arboretum in America. Not the least feature of this park is the stone house still standing, the work of John's own hands. The date of its erection is shown by a stone tablet inset in the wall on which is carved "John and Ann Bartram, 1731." The inscription over the front window of his study reads "'Tis God alone, almighty God, The Holy One, by me adored."

That the building was a labor of love is shown by the care bestowed on the carved

stonework around the windows and doors, and the pillars under the porch. The above motto and others show the fine spiritual quality of his mind, and yet he was somewhat in disrepute with his Quaker brethren because he would explore and work with his plants on the Sabbath Day. In this house Alexander Wilson wrote the first part of his great work on birds, aided by suggestions by the son, William Bartram.

Surrounding the garden were walls and terraces sloping down to the river, planted with trees and shrubs of all kinds both native and foreign, deciduous and evergreen, blossoming shrubs, white and red cedars, spruce, pines, firs and many others. Here the rare and beautiful *Franklinia*, named for his friend Benjamin Franklin, still stands. True, not the original one, but from the original. A pear tree stands near one corner of the house, raised from seed sent to Bartram from Lady Petre about the year 1750; still bearing fruit after one hundred and fifty years. Lord Petre is said to have planted ten thousand species from seeds, cuttings and plants sent over to England by the Bartrams. Many eminent artists, writers and scientists have visited here in the comfortable stone house, among whom Benjamin Franklin was a cherished visitor. He had given Bartram one of his many inventions, a Franklin stove, by which they sat on winter afternoons with mugs of cider drawn from a press in the garden.

At this early age, no one had explored the flora of America; the colonists were too busily engaged in providing food and shelter for themselves and defending themselves from attacks of hostile Indians. In England, however, the style in gardening was tending away from the formal to the more naturalistic, and gardeners were in search of new and striking trees and shrubs for their plantings. In 1733 a mutual friend sent some of Bartram's plants to Peter Collinson of Mill Hill Farm in Essex,

*Mrs. Thorgrimson is Co-Editor of the Bulletin Editorial Board.

Royal Botanist to King George III. This led to a friendship between the two and a frequent exchange of letters, though they never met over a period of thirty-five years.

Collinson was constantly urging Bartram to send him seeds, roots, and cuttings of all the plants he found. He was employed to send to other horticultural enthusiasts also. One such arrangement was made whereby Bartram should send boxes of seeds, each containing one hundred and five sorts at a fixed price of five guineas a box. Among his correspondents were Dr. Fothergill, Sir Hans Sloane and the great Linnaeus.

In 1738 he made a journey through Maryland and Virginia, up the James River and over the Blue Ridge mountains, traveling over eleven hundred miles in searching out new and rare plants. It must be remembered that traveling in those days was done on foot, in canoes or small boats, or on horseback. His travels were incredible, considering the hardships and dangers encountered, not only from wild animals but from the Indians. But by his kindly and gentle demeanor he usually won their confidence and friendship.

In the succeeding years Bartram traveled throughout most of the colonies from Nova Scotia to Florida and from the Atlantic west to Ohio and the Great Lakes. In one of his journeys in 1743, in New York, he found *Magnolia acuminata* growing to nearly a hundred feet in height. Collinson received some of the seed and twenty years later wrote Bartram, "I am in high delight, my two mountain magnolias are pyramids of bloom."

At an early age, William, the son, began to accompany his father on his journeys into the wilderness, and his drawings (an art in which he excelled) of natural subjects were sent on to England with his father's letters. Collinson and his friends supplied Bartram with funds, commencing with £21 per year and increasing the amount to £100. That Collinson was generous in other matters is evidenced by the amusing letter published in the *Virginia Quarterly Review* of April, 1934: "One thing I must desire of thee and do insist that thou oblige me therein; that thou make

up thy drugget of clothes to go to Virginia in, and not appear to disgrace thyself or me; for though I should not esteem thee less to come to me, in what dress thou wilt, yet these Virginians are a very gentle, well-dressed people and look perhaps more at a man's outside than his inside. For these and other reasons, pray go very clean, neat, and handsomely dressed to Virginia. Never mind thy clothes, I will send more another year." It would be interesting to know how well John received these instructions and how well he followed them.

In 1765 the British King employed Bartram to visit the two Floridas, "the very palace garden of old Madam Flora." William accompanied him on these trips and their collections included minerals, fossils, insects, birds, frogs, lizards, seashells, snakes, turtles; all things of nature, animate and inanimate.

Returning home from his exploring trips with all his loot, he sent them abroad, accompanied by drawings by his son. This same year the father and son went south, again visiting St. Augustine and ascending the St. John River to its source. Later William explored the coast lands of the Carolinas and Georgia and into Florida and westward to the Gulf of Mexico.

In a book by R. Hingston Fox, "Dr. Fothergill and His Friends," we find this paragraph relative to William's travels: "In the spring of 1776, he penetrated into the Cherokee country and traversed the lands of the Creeks and the Choctaws through what is now Alabama as far as Mobile and Lake Pontchartrain. The journey was an adventurous one, Bartram finding his way either on foot or on horseback, or in a small boat among the far wildernesses of the South and fraternizing with the red man."

He seldom wrote home and his friends gave him up for lost among the hostile Indians but his gentle ways carried him everywhere unharmed. He returned to Pennsylvania in 1778 to find his father dead and the Colonies engaged in the Revolutionary War.

During his explorations, he made a practice, each night before his fireside, of jotting

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Oregon White Oak

(*Quercus Garryana* Dougl.)

C. FRANK BROCKMAN*

THE somber character of Northwestern forests, composed largely of coniferous evergreen trees, is highlighted here and there by a number of distinctive broadleaved deciduous trees. Unique in contrast to their associates and their environment, they are of particular interest. Among such trees is the Oregon white oak (*Quercus Garryana*) which, to those of us who have lived in the eastern part of the United States, is often reminiscent of associations with the much more extensive and interesting oak flora of that area. Like many of our native Northwestern trees, its name is connected with early Northwestern history, for the specific name was given in 1840 in honor of Nicholas Garry, secretary of the Hudson's Bay Company, in return for the aid he rendered early botanical explorers in the Pacific Northwest.

As with all members of the white oak group, the lobes of the leaves, usually 5-7 in number, are rounded. In addition, the margin of the leaf is rolled under and the lower surface is covered with brown hairs. In the spring, at about the time the leaves begin to unfold, the tips of the branchlets are festooned with clusters of slender, pendant catkins—the staminate flowers. Pistillate flowers, found on the same tree, occur singly or in pairs and develop into the familiar acorns which are produced in large numbers, for this tree is a prolific seeder.

Although the Oregon white oak occurs from southern British Columbia to the coastal area of central California and grows under a wide variety of soil conditions, it attains its best development on deep, rich loam in areas where the humidity is low during the summer months and where annual rainfall does not exceed 30 inches. Consequently it reaches

greatest size and abundance in the intermountain valleys and lower slopes of the Cascades and Siskiyou of southern Oregon and northern California. Here it not unusually attains a diameter of three to four feet and a height of 75 to 80 feet. In Washington, however, this tree is generally much smaller and often scrubby in appearance, although there are, of course, many exceptions. It is commonly seen on the prairies south of Tacoma, and motorists using Highway 99 en route to Portland will note this oak all along their route to the Columbia River. It is also found in the San Juan Islands, as well as upon the lower Cascade slopes in the vicinity of Mount Adams where it often occurs in considerable abundance. East of the Cascades it may be found in the Yakima and Columbia River valleys—generally at elevations below 3500 feet. In its natural environment the Oregon white oak is easy to recognize throughout its range in Washington, for it is the only oak native to our state.



McEwan Planting

Because of the many difficulties which beset the McEwan planting at the foot of Rhododendron Glen, it was decided by the Seattle Garden Club to seek a more suitable site.

The new planting completed this spring is located in a beautiful setting adjacent to Azalea Way near Loderi Valley. There is a natural existing tree growth dominated by two giant Arborvitae (Cedar) and supplemented by two spreading specimens of Shiro-tae (Mount Fuji) Cherry. In addition are to be found Fir, Madrona, Kwanzan Cherry and eastern flowering Dogwood.

The planting is designed as a quiet retreat, simple in layout and decor. Three log seats are conveniently placed for resting. To insure minimum maintenance, a wood chip surfacing has been used on the paths in place of grass.

*This is the sixth in our series of articles on trees native to the Pacific Northwest.



Oregon White Oak

—PHOTO BY C. FRANK BROCKMAN

Evolution of Modern Landscape Design

MRS. W. WEBB MOFFETT*

WHAT is landscape design?

After reading many definitions of the term by well-known landscape architects and by historians in the field, I find Richard Neutra, an architect, not a landscape man, gives me the clearest definition. He says, "Landscaping is the organizing of outdoor space for people to use and enjoy."

It is a common fallacy for us to consider landscape design to mean plant material and its arrangement. True, plants are the most important material with which we create the design, but plants are neither the beginning nor the end of good landscape design. Today we must consider the structural design of gardens and, as Neutra stresses, the human relation of people and gardens. But first let's take a walk into gardens of the East, gardens of the West, gardens of the past, from whence our gardens came. For surely the gardens of some country or past cultural era have provided partial inspiration for our indoor-outdoor modern landscaping of today.

Our English Heritage

A great many of us are of English descent and, until recent years, most of the landscaping in this country followed the English tradition of gardening. So let us trace landscape design in England through the last two centuries.

Up to the beginning of the 18th century, English manors had been following the "Grand Style" landscape tradition of France and Italy. The design was strictly formal—axial in line. The great landscape master of this formal manner was Le Notre of France who designed the gardens at Versailles for Louis XIV. Le Notre's work exemplified the symmetrical technique in the highest form it can attain. There was no attempt at closeness to nature or an affinity of people and garden. His gardens were the product of an intellectual age.

*Mrs. W. Webb Moffett is a member of the Arboretum Foundation and of Lake Washington Garden Club Unit No. 2.

The English departed from this formal tradition in the 18th century and developed a style of "picturesque gardening," or as Tunnard expressed it, "the awful beauty of the English 18th century garden."

This revolt against formality stemmed mainly from the writings of Addison and Pope who extolled the beauties of landscape painting and the wilds of nature—and the stupidities of geometric gardening. One of the landscape men, Batty Langley, expressed the common trend in gardening in 1728 when he said, "Is there anything more shocking than a straight line?" It became a landscape period of "unplanning"—and lasted 100 years.

Let us look at the work of Lancelot Brown, known as "Capability Brown," who reigned at the head of English landscape designers from 1750 to 1783. He could rise to magnificent heights such as Blenheim (and we are thankful to Brown and his followers for their tree planting) but most of his work was in poor taste, as we see it today.

Brown loved to change the landscape, just for the sake of change. He was especially admired for his clumps and hillocks. He and the others eliminated all geometry, order, and rational planning of landscape. He idealized nature and introduced every sort of picturesque, wild, ruined, romantic, irregular and pictorial element possible. There was the age of the "grotto" where "in horrid gloom society shuddered with the poets." It was the age of zig-zag shrubberies. Ruined abbeys were erected to invoke a mood of melancholy and pagodas were added to landscape furnishings.

During this dictatorship of Brown, Wright and their followers, flowers and flower beds were practically done away with. They were considered "frippery" and not nature.

The Romantic age of gardening also developed in France during this century but they continued to use the straight line to some extent.

However, in England the picturesque school died out with the 19th century and the Victorian tradition was born. Repton was the best-known landscape man in England in the early part of the century. He combined grandeur with nature and good sense.

By the 1840's straight-lined walks and the creation of knot gardens had come into style. Landscape gardening was growing very popular and the only qualification of a good design was "an appreciation of natural beauties." Greenhouses became popular and hybridists were at work. A typical Victorian garden possessed both a "landscape garden" with shrubs and an "architectural garden" with patterns. However, one of the favorite trends was toward ornamental carpet bedding, and it is the still, unnatural style which is usually identified with the Victorian garden.

Gardeners and landscape men in England had a rude awakening in 1883 with the publication of William Robinson's book, *"The English Flower Garden,"* a work containing Miss Gertrude Jekyll's views on garden color. Robinson and Miss Jekyll protested against Victorian formalism and introduced the herbaceous border, large beds of simple shape, and the use of hardy flowers. They both were good gardeners and we now know them as pioneers in the art of adapting material to the site.

And so into the 20th century. In 1936 the following description regarding small English gardens was noted by Tunnard: "The English garden, like the English Sunday dinner, is pretty much the same throughout the country. Most gardens consist of rose beds, herbaceous border, lawn and rockery and, in all but the very smallest, there is a pergola garlanded with Rambler roses."

In 1938, Christopher Tunnard, a leading landscape designer, began to talk about a "new technique" and admit that garden and house were maladjusted. He said, "The modern house requires modern surroundings and in most respects the garden of today does not fulfill this need."

I have gone into detail regarding the English tradition and evolution of gardening

because the gardens in this country, especially the large estates, followed the same line. But our modern landscaping bears no resemblance to the formal tradition of Le Notre, the picturesque style of Capability Brown, or the Victorian garden. So now let us go back again, to past centuries in other parts of the world, to see if we can find gardens which more closely approximate our modern gardens of today, where gardens and homes are truly linked.

Inspiration from the Past

Beginning with certain Egyptian villas and less pretentious Roman developments we do find this indoor-outdoor closeness expressed in medieval cloisters, in Persian gardens, in the gardens of the great Moguls in India, in Chinese court gardens, Japanese gardens, in Moorish gardens of north Africa and in Spanish and Mexican patios. All of these have secluded, private and structurally enclosed outdoor space in which a rather free arrangement of plant material occurs.

The Moorish gardens in Spain are a good example. Here are patios partly or wholly surrounded by buildings, accessible only to the owners and thus defended from the outside world. These are derived from the gardens of Persia and Syria. Some of the fruits and flowers which seem to be typical of Spain were brought from the east by the Moorish invaders.

Today we can see the most beautiful example of this type of landscaping in the gardens of the Alhambra. Here we have shade and coolness, a love of flowers and the scent of flowers. We see wonderful use of water in the garden—essential, not only for the growth of vegetation, but for its cooling effect, physical and psychological.

The Moors left their stamp on the culture of Spain and this form of indoor-outdoor integration in the home site was eventually carried by the Spaniards into Mexico and California. So here we find our first real link between the old and what we consider new.

In the same way that the Arabs carried garden design into Spain, so did the Mon-

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ARBORETUM SPOTLIGHT

Queen of the Deciduous Magnolias

(No. VI)

A TROPICAL looking leaf on a North American tree is a rarity indeed—yet the Big Leaf Magnolia has just such a leaf up to thirty inches long and ten inches wide. It is the species *macrophylla* and this tree has the largest leaf of any tree of the North American continent. One authority goes as far as to claim it is the largest single leaf of any tree in the world!

It is considered the queenliest of all the deciduous Magnolias, for not only big leaves but also large flowers grace the tree. The latter are cup shaped, ten to twelve inches across and nearly as deep. The petals are thick-textured, the color a creamy white. The flowers have a very pleasing penetrating fragrance.

Although having a comparatively wide range of growth in the south—Florida to Louisiana and North Carolina to Kentucky—the Big Leaf Magnolia was found in scattered

locations and then only as an occasional specimen. Actually it has always been considered a rare tree even in its native haunts.

It grows naturally in deep swamp woods or in valleys sheltered from the wind and is considered one of the understory trees, averaging between thirty and forty feet in height.

Although possessing unusual characteristics, few will grow this tree in their garden since it requires a sheltered position free from strong winds. Then too, its winter aspect is coarse and harsh. So it is fitting that the Arboretum has specimens of the Big Leaf Magnolia for observation. They are to be found on the south side of Rhododendron Glen near the Camellia collection. You can't miss them—so come visit your Arboretum in June and see this "Magnolia Queen." ROBERT J. HANSEN

(Below)

Magnolia macrophylla, south side of
Rhododendron Glen.

—PHOTO BY E. F. MARTEN



The Importance of Plant Materials

JOHN B. STRANDER*

THE propagation and growing of plants, known as horticulture, is one of the oldest arts of man. The use of plants to create functional and beautiful areas of land, called landscape architecture, is possibly equally old. In fact, according to one contemporary authority, the first practicing Landscape Architect was He who created the Garden of Eden.

Gardening is only one facet of that mass of interlacing creative activities which combine to provide the culture of the period. Music, literature, sculpture, architecture (and the base, philosophy) make up the major portions. Gardening itself progresses and declines in a line roughly parallel to the others. At some periods it becomes the most important, in others it lags. Each generation has expressed itself and added its own response to the romance; each has built its own living creations tied intimately to its people's needs.

To retell the story of landscape architecture is not necessary in order to show the importance of plant materials. In every age, and at every time, the basic building block of the garden has been the plant materials. No matter the use of the garden, nor its extent, nor its planned permanency, the design has always revolved around the plants to be used. Those plants may have been simple natives or rare importations, and the over-all plan may have promised only a dooryard grouping—or an extensive arboretum.

With the advent of the new art, begun in painting and rapidly spread throughout other mediums, gardening also forgot its old measures and began to look for new modes of expression. The geometry of the formal was too unyielding to fit the architecture. The informal was too indefinite and the naturalistic had slipped into disuse.

In the beginning there was much experimentation; units of the old form were lifted

bodily and compressed into strange concrete borders with most odd and meaningless result.

It was not until the "outdoor living room" with its terracing was developed that we had a logical base from which to start. Then came the much advertised theme of "living from boundary line to boundary line." A freedom of line was developed, actually very formal, yet planted with soft and tropical-appearing broadleaved evergreens.

The combination was good, it was fresh, and was the mark of our contemporary. It fitted the multitude of new materials being developed by our builders, and complemented the stark, strong lines of our newer buildings. The soft, rather unruly plants foiled perfectly with their surroundings. At this point we had a new expression.

Early as it may be for evaluating, it is time to examine what is going on and in which direction we are aiming. Year by year our landscape techniques become more commercial, our construction more regular and factory-like. The original experimentation is finished, and rules are replacing free thought. American formal teaching in the field is swinging from an emphasis on horticulture to an emphasis on design. The result is gardens without plants, save a few container-grown "showpieces." Yes, design is important—but in a garden it must come from leaf and branch, and not from wood and steel.

This system results in low maintenance, and in a great deal of saved space. It also solves the problem for those who have no interest in growing plants.

It also results in a complete reversal of all things which gardening stands for. It is possibly foolish to write about the importance of plants in a journal devoted to horticulture, since its readers will probably not need convincing. A warning, however, is in order.

Let us examine our subject. There is no visual art similar to landscape design. No

*Mr. John Strander, who received his degree in Horticulture at Cornell University, is associated with his father in the Strander Evergreen Nurseries, Seattle.

other form of expression allows one the combination of daily change along with relative permanence. The static forms of sculpture, the colors of painting, the fleeting grace of dance—all combine in landscape. The mysteries of botany and the feeling of nature are also present. When we now subtract the most important element of all—the plants—the remainder is somewhat lacking.

Without plants there can be no garden. By this we do not mean the use of plants to build a promiscuous “jungle”; quite to the con-

trary, a strong restraint is always necessary that each specimen be given its just space. What we do mean is that to construct a garden from “gravel and asphalt,” no matter how well it fits the house, is to have no garden at all. In our haste to have our homes extend to the property line we overlook the fact that a garden and house can never be one and the same. We can join the two, we can make the house look as if it belonged, and we can interlace a spreading home into an integral part of the garden—but we cannot substitute.

Arboretum Fox Squirrels

ROBERT K. MILLS*

THE fox squirrels frequently seen in the University of Washington Arboretum are a long way from Oklahoma, the native habitat of their forefathers. It has long been my intention to relate the interesting story behind their appearance in the Arboretum.

I came to Seattle from Oklahoma in 1931, as a teen-aged youngster, to live with aunt and uncle, Mr. and Mrs. J. W. Wheeler. The following year, Mr. Wheeler stopped off in Oklahoma, on his return from the East, to obtain some black walnut lumber. In his search for lumber, he made inquiries from some half-breed Cherokee Indians who had gone to school with me. They showed him some baby fox squirrels they had captured on a recent squirrel hunting trip and suggested that he send them to me in Seattle. The squirrels were crated and shipped express, arriving in Seattle none the worse from their long journey. I picked the young squirrels up at the depot and immediately gave them food and water and began to build them a home.

The squirrels were soon at home in a special house with built-in Madrona tree, wheel, and private quarters. They were also given personal names of Peggy, Chris and Lightning. They became great pets, particularly

Chris, and were quick to learn almost anything we attempted to teach them. People heard about the squirrels and came from all parts of the city to see them. I would let them out of their house where they could perform for everyone. The squirrels and visitors became so time-consuming that I decided to move the squirrel house to Mr. Wheeler's private park, which is located in a little valley below Interlaken Boulevard, adjacent to the Wheeler residence.

In the summer of 1933, after the squirrels had become acclimated, I opened the door to their house and let them come and go at will. They stayed around pretty well for some time; however, eventually they ranged farther and were gone for longer and longer periods. Chris came back alone one time and stayed for several weeks before rejoining his brother and sister. Thereafter they were not seen for several weeks until one day they were noticed near the west entrance to the Broadmoor Golf Club. They have made their home in this region ever since.

For all these years I have taken frequent walks through the Arboretum and fondly watched the squirrels which to me will always be pets. Recently I saw a big fox squirrel near 1924 Interlaken Boulevard where the original squirrels were released twenty years ago.

*Mr. Robert K. Mills, an Arboretum neighbor, sent in this bit of information about some of the Arboretum's guests.

New or Unusual Plants in the Arboretum

1. *Cistus Aguilari* forma *maculatus*

The *Cistus* collection assembled in the Arboretum since 1945 now includes some twenty-two species and varieties, with eight hybrids. They are planted in the higher part of the Arboretum in an open site facing south-east where the soil is light and well drained, and except for damage by severe frost and cold winds in January and February 1950, have grown well and annually make a fine display in midsummer.

Most of the plants have, for convenience, been raised from seeds received from European botanic gardens, a process which sometimes leads to variation in the resulting seedlings, with products which are not always desirable, or to misnamed species inferior to those anticipated.

A few, however, have been imported from

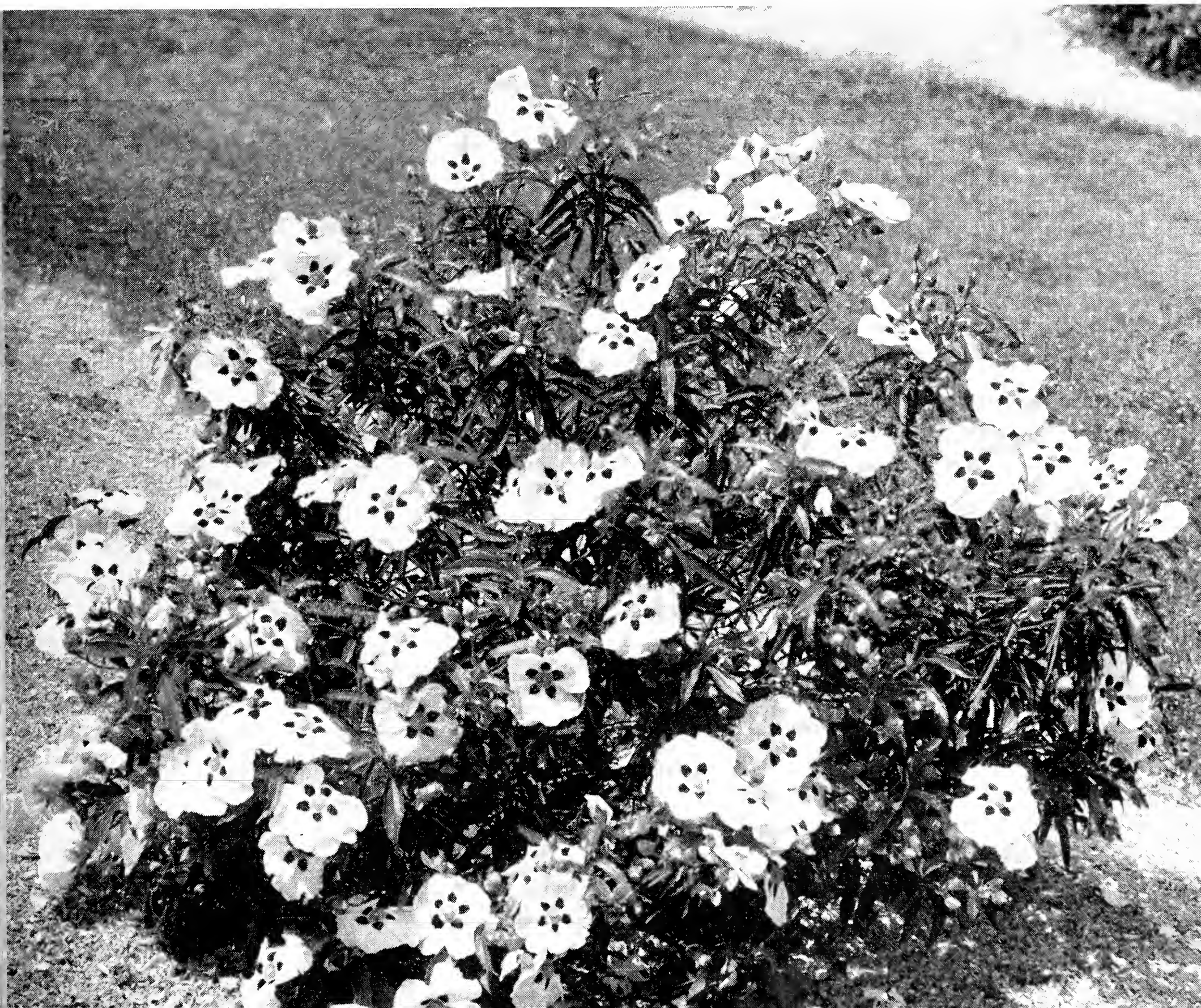
England as young plants, and amongst these the present hybrid is outstanding. Received in January, 1949, the original plant was killed in its first winter, which happened to be by far the coldest experienced in Seattle for many years. Fortunately, cuttings of this as well as of the unspotted *C. Aguilari*, acquired at the same time, had been taken and successfully rooted during the late summer or early autumn of 1949, and five plants of each were put out in May, 1950. It is one of these individuals, now three feet high and four and a half feet wide, which is shown in the illustration, made June 9th, 1952.

Cistus Aguilari is a rare natural hybrid
(Continued on Page Thirty-two)

(Below)

Cistus Aguilari var. *maculatus*
flowering in early June.

—PHOTO BY E. F. MARTEN



You Can Grow It From a Cutting

ELSE M. FRYE*

THIS paper is a condensation, and an interpretation toward amateur propagating problems in this region, of Bulletin No. 382, March, 1941. "The Propagation of Some Trees and Shrubs by Cuttings," compiled by William L. Doren, Research Professor of Botany in the Massachusetts Experimental Station, Amherst, Mass., and also of "The Propagation of Flowering Trees and Shrubs" presented by F. B. Knight to the Royal Horticultural Society in 1938. Mr. Knight was for many years in the propagating department of the Royal Botanic Garden at Edinburgh and at the Arboretum at Kew. Also the L. N. Roberson Co. has been generous in sharing its experiences.

In taking cuttings the age of the wood, varying in different climates and even in local gardens, is important; annual climatic inequalities are factors that must be considered. To a beginner this condition of the wood is something one feels more in one's hands than in one's mind. The cuttings should not be herbaceous—soft; neither should they be tough and woody. The experiments on which this paper is largely based were done in the East; I have a feeling that with our slower seasons cuttings should often be taken a little later than noted.

Usually cuttings are made of wood of the current year's growth four to six inches long. Many conifer cuttings, however, can be made of shoots of two years' growth, an advantage in getting a sizable plant. The more leaves that can be left on the cutting the better equipped it is for continued transpiration. In general the cutting should be taken from the sunny side of the plant. Since root-producing chemicals are situated in the apex of the bud and travel quickly to the cut end it is important to cut the shoots to size immediately. If large branches are taken and later cut into

proper lengths this chemical is lost. I do not like to cut the tops away from my cuttings; some, *Daphne Genkwa*, for instance, do not root well if at all after that is done.

Leaf-bud cuttings is a very economical way to utilize available wood, though it does add a year to the time involved in producing a blooming plant. Half-ripened wood should be chosen. One leaf with the bud in its axil and a small portion of the stem to insert in the cutting medium makes this kind of a cutting. This method has been used close to a hundred years and is very good with *Camellia* species and varieties; *Leucothoe Catesbaei*; *Pieris species*, and broad-leaved rhododendrons.

Root cuttings may be made of many things in fall and winter. Two- to four-inch sections of the root may be buried in sand or open ground in trenches; *Paulownia*, *Romneya*, *Buddleia*, *Daphne*, *Cydonia*, *Rhus* and *Aralia* are only a few of the possibilities.

Irishmen's cuttings, or suckers with roots, are sometimes a source of new plants. These are best removed in early spring. Lilacs on their own roots and viburnums are conspicuous examples.

Layering is a natural process among wild plants if conditions are just right, and in the garden it is a good and economical way to acquire numbers. Shoots to be layered may be from two to fourteen inches long depending on the stature of the plant: the leaves of the portion to be buried should be removed; the stem should be twisted before bending upward and the bark scraped from the under surface. This is to arrest the natural flow of sap and assist in the formation of roots at that point. Cover with peat or sand or garden loam. This process takes from one to two years.

To utilize a shrub completely it may be planted on the side, thoroughly soaking the roots, and pinning down and covering all ultimate branches and shoots. After removal

*One of the most active Arboretum Units bears the name of an always willing contributor to the Bulletin, whose articles are always welcomed and appreciated—Else M. Frye.

of rooted shoots the plant can again be set upright and will most likely come from the base.

It is usually thought best to take cuttings from heaths and heathers, but they may also be layered. After spreading the branches, one-fourth to two-thirds of the length of stems may be buried in sand and peat. After a year the plant may be lifted and separated into new plants.

Preparations: Flats of sharp, clean plaster sand for woolly-leaved, gray-leaved, or hot-country things. Flats of the same sand and peat in equal parts put through a quarter-inch screen for ericaceous plants. The L. N. Roberson Co. uses large quantities of vermiculite in their cutting benches; one-third peat, one-third sand, and one-third coarse vermiculite for ericaceous plants. Vermiculite by itself but less coarse for *Lithospermum*, *Daphne*, chrysanthemums and the like.

The rooting medium should be five to six inches deep. If more, the cuttings are too far from the moisture level; if less, the dangers of drying are too great. Temperatures of 55 to 70 degrees are average. In general, shading hinders formation of roots but cuttings should not be allowed to wilt. From temperature standpoint and ease of work a greenhouse is a great advantage. Even a cold frame is better than planting cuttings in the open but for most things they are not a dead-end necessity. My first efforts were carried on in an open, sandy-loam bed and being before the days of hormones the cuttings were occasionally watered with a weak vinegar water solution.

Later, during the time I was making quantities of cuttings, I used to immerse them in hormone solutions—so many drops of solution in so many ounces of water, the cuttings to be left so many minutes to hours, varying for each particular plant. It was a pother. And the work from which this paper is largely deduced was carried out in that way. For the sake of amateurs, myself as well, these solution hormones have been translated to powder hormones under the trade names of Rootone and Hormodin. These can be had in several

strengths and it is best to study the tables which accompany them to get the best results. If the plant you are using is not listed you can safely use the strength given for a nearly related plant. The Robersons do not use any of these hormones but drop their cuttings into a solution of potassium permanganate as soon as cut. It is important not to use this in addition to a hormone powder—the two are antagonistic and work against each other. Many workers think that hormones do not actually increase root-production but that they do lessen the time involved, and where space is limited that is desirable in itself. Also as time drags on a cutting without roots is in a more precarious situation than one with roots.

The time involved in rooting various species of plants differs greatly and depends somewhat on the condition of the cuttings when taken. Although there is an optimum time—sometimes no more than a few hours—I never refuse a cutting of some wished-for specimen. I try anything at the most inopportune times from the plant's viewpoint. And many times the most unlikely looking cuttings have rooted.

When sufficient roots have formed the cuttings should be transplanted to good growing soil in flats, and after they have made appreciable growth they may be transplanted to beds. If too large a callus has formed which roots are unable to penetrate it must be operated on—a large portion should be cut away. Camellias are the greatest offenders in this.

It is great fun to make cuttings—a process I approach with a good deal of wonder, for then I am initiating a miracle, inducing roots and reproductive organs, a sort of continuous immortality, from a meager portion of a plant made up only of leaf and stem. In comparison, the rejuvenation of a lizard's tail seems simple. It is also an adventure—there is no telling—the veriest amateur may be the one to extend our knowledge of this craft which is still so limited.

Cutting Table Arranged by Months:

JANUARY:

Andromeda polifolia and vars.—sand-peat.
Arctostaphylos uva-ursi—sand.

(Continued on Page Thirty-one)

Camellia Diseases

CHARLES J. GOULD*

ALTHOUGH camellias are fortunately not often affected by serious diseases in western Washington, a few minor ones do occasionally cause some damage. These are discussed in the following article. In addition, descriptions of some potentially destructive parasites from other areas are included. Success in the battle against diseases is often primarily a matter of maintenance of good cultural conditions. A plant weakened by nutrient deficiencies, improper location, lack of water, etc., can hardly be expected to withstand a fungus attack as well as one in good condition. Varieties vary in their susceptibility to certain troubles such as cork spot, bud drop, and root rot. The average home owner with only a few plants might find it more feasible to discard or avoid purchasing such "weak" varieties and obtain resistant types than to expend perennial effort toward control.

Cork Spot

More specimens of cork spot are received annually at the Western Washington Experiment Station than of any other camellia disease. It first appears as a brownish, somewhat translucent spot on the underside of the leaf, later becoming dry, brown, raised and corky, and varying from small and circular to $\frac{1}{4}$ inch or more and irregular in size.

Recent investigations by Plakidas in Louisiana have shown that this is a non-parasitic disease caused by fluctuation in soil moisture and transpiration. Plants grown in waterlogged soil often have it. In recent experiments, Plakidas achieved excellent control by spraying the leaves with a wax emulsion, using three or four sprays of Dowax 222 at 1 part to 25 parts of water in 1949, and 1 to 30 in 1950. Both years only a very slight leaf burning occurred. In 1951, two or three applications with the same material at 1:50 gave complete control but severe leaf burning. In another test, "Good-rite Latex VL600" at 1:10 in

water, with three applications (June 26, August 6 and September 8) resulted in nearly complete control with no apparent injury. Thus it appears that a wax emulsion spray, properly timed, will control the disease. However, local tests may be desirable to determine the safest material, concentration, and conditions of application.

Yellow Mottle Leaf (Virus)

The yellow variegation of leaves may be either a natural (genetic) condition or a disease caused by a virus. In the former type the variegations usually follow a uniform and rather typical pattern which is more or less similar on all leaves. However, the yellow areas caused by the virus are irregular and vary on different leaves, branches, and plants. Affected plants grow quite normally, but the leaves are more susceptible to sunburn and frost injury than are normal leaves.

It seems probably that at least some of the variegation in flowers may be caused by a virus. One scientist has even suggested that new varieties might be developed by intentional grafting of diseased material onto healthy plants. While this might be true, it would seem rather hazardous since the virus might spread to all plants, with a consequent variegation of all flowers. We recommend the elimination of all plants suspected of being virus-infected. Propagators should be extremely careful to use virus-free rootstocks for grafting.

Leaves of plants growing under poor conditions may turn yellow. However, this yellowing is rather uniform in contrast to the mottled yellowing from virus infection.

Dieback and Canker

This disease is serious in the southeastern United States and probably is present here. It may appear as a rapid wilting and death for young twigs, with the leaves turning brown, or as a dead, discolored area on the stem. The latter may be completely girdled, resulting in death of the terminal portion. In-

*Dr. Charles J. Gould is Plant Pathologist at the Western Washington Experiment Station, Puyallup, Wash.

fection can occur on buds killed by freezing. Therefore prevention of such damage would naturally help in control. Killed buds should be removed promptly. Likewise all stems with cankers and dead twigs should be cut out and burned.

Bud Drop

During certain winters large numbers of buds fall or the tips of the buds and edges of young petals turn brown and decay. Some varieties suffer much more from this than do others. Bud drop has been attributed to severe frosts in September and October, to severe freezing weather during the winter, and to an irregular water supply. It may also be caused by the disease mentioned under Die-back.

Be certain that the plants do not suffer from a lack of water. Cover them for protection against sharp frosts or freezes. Harden off plants by avoiding later watering and fertilizing. Avoid planting in poorly drained spots. Mulch in order to maintain as uniform soil temperatures and water supply as possible.

Sunburn

Sunburned areas appear on leaves as faded green to brown dead areas with indefinite margins. They are most common on the upper and exposed side of bushes. Affected areas may be attacked by fungi, change color and fall out.

Sunburn is the result of sudden exposure to bright sunshine by transplanting from a shaded to a sunny location, turning bushes around so the former north side is facing south, removing overhanging branches, etc. Avoiding these situations assists in control. It also seems probable that bright weather during winter when the soil is frozen or cold may result in a drying of the leaves and similar symptoms. Under such conditions more water is lost from the leaves than is absorbed by the roots. Partial shading should be beneficial. Mulching may also help.

Leaf Spots

Leaf spots are usually brown and may be small or large. However, they are generally unimportant on camellias, usually attacking

only leaves and plants weakened by sunburn, freezing, etc. Keeping the plants in good vigorous growing condition will ordinarily give sufficient control. Otherwise use some type of copper spray.

Flower Blight—(Sclerotinia camelliae)

This is potentially the most serious camellia disease that has appeared in the United States. It attacks only the flowers, but of course it is the flowers for which camellias are usually grown. The disease has been found in plants shipped into Washington from infected areas, but to the best of our knowledge it has not become established here. If suspected plants are found, send them to your nearest Experiment Station for diagnosis. Let's keep this disease out of Washington.

The first symptoms are small brown spots which may quickly enlarge and cover the entire petal. The veins are usually darker brown than the surrounding petal tissue. Later a hard dark brown to black body (called sclerotium) forms in the base of the flower or in individual petals. These sclerotia may be shaped like a petal or miniature flower.

The sclerotia remain dormant during the winter, but as flowering season approaches they produce saucer-like objects (3/16 - 3/4 inch in diameter) from which the spores are shot which infect the new flowers. The sclerotia may remain dormant for three years before germinating.

This disease has sometimes been mistaken for frost injury. In the latter case the brown area is usually restricted to the outer or marginal portion of flowers or petals. Botrytis may also produce a brown spotting, but not the network of darker veins or internal sclerotia.

Sanitation is the best control that has been devised for this disease. Since only flowers are infected, all flowers, both on the bush and on the ground, should be removed from infected plantings. Burn such material. Do not put it on a compost pile. It is very easy for sclerotia to become mixed with the soil or mulch under infected plants. Therefore flowers should not be allowed to decay or, if they

(Continued on Page Twenty-seven)

Oriental Flowering Cherries in Central California

WALTER C. BORCHERS*

ABOUT 1917, shortly after Mr. W. B. Clarke started his nursery business in San Jose, he became interested in oriental Flowering Cherries and started to collect all of the varieties which were available. This led to an attempt to straighten out the nomenclature and varietal differences, which were extremely confused at that time. In collaboration with Mr. Paul Russell of the United States Department of Agriculture, and Mr. Collingwood Ingram of Bendenden, Kent, England, most of the varieties then known were checked, so that the information was finally consolidated, and resulted in the issuance in March, 1934, of U. S. D. A. Circular No. 313 entitled "The Oriental Flowering Cherries" by Paul Russell. In 1948 Mr. Collingwood Ingram in England published a descriptive volume entitled "Oriental Cherries."

During the course of Mr. Clarke's test work, he attempted to obtain propagating material and grow for testing and clarification about 100 varieties. From these were selected in the neighborhood of 30 varieties, which between the years 1930 and 1945 were grown commercially by the nursery. This list is interesting as it was probably one of the most complete collections of oriental Flowering Cherries ever produced commercially in this country, and for that reason it is included at this point.

AKEBONO (Daybreak)—A very early, single pink form of the Yoshino cherry, selected and named by W. B. Clarke. A medium large, spreading tree.

AMANOGAWA (Milky Way) — Semi - double pink flowers in erect clusters. Tree form is very narrow and erect. Moderately slow growing.

BENI-HOSHI (Pink Star)—Flowers moderate sized, single vivid pink and "star" shaped, owing to the lengthwise curled petals. Tree is fast-growing, with long slender branches. A seedling variety discovered and named by W. B. Clarke.

DAIKOKU (God of Prosperity)—Large flowered, very double, pink, deeper on outside.

*Mr. Walter C. Borchers' article on Flowering Cherries arrived too late to be included in our Spring (1953) Cherry issue, but we are pleased to include it in this later issue. Mr. Borchers is secretary-treasurer of the W. B. Clarke Nursery in San Jose, Calif.

Medium-sized tree. Imported from England about 1930.

GOSHO (Zakura) — Rich pink, semi-double, and very floriferous. Obtained in 1928 from U. S. D. A.

GYOIKO—Similar to Ukon—flowers double yellow with green stripes, finally turning to cerise. Imported in 1917.

HORINJI—Large light pink double flowers, abundantly borne in large drooping clusters. Blooms over a long period. Buds obtained from Rochester Park Department, N. Y., in 1919.

JUGATSUZAKURA (*P. subhirtella autumnalis*)—Fall flowers faintly pink, spring flowers deeper pink and profuse over a long period of time. Compact spreading tree. Slow growing. Obtained from U. S. D. A. at Chico, Calif., in 1920.

KAIDO—Medium semi-double pink flowers, similar to Kaido Crabapple, profusely borne on slow-growing erect trees. Foliage colors well in fall. An unknown variety, obtained about 1920.

KANZAN (Kwanzan)—Very large double flowers, deep rosy-pink. Vigorous growing tree. Well known.

KURAMAYAMA (Mt. Kurama)—Large double flowers, light pink centers, stained cerise at frilled margins. Slow, compact grower. Obtained in 1920 from Rochester Park Department as an unnamed variety.

MIKURUMA-GAESHI (Mitchell's Single Pink)—Flowers profuse and deep pink in large clusters. Grows large and similar to fruiting cherry. Obtained in 1934 from Sidney Mitchell's original tree in Oakland, Calif.

OJOCHIN—Flowers large, single white, sometimes flushed pale pink, and petals are often pleated, giving effect of double flowers. Medium erect tree. Buds obtained in 1919 from Rochester Park Department, N. Y.

SHIBORI (Bizarre)—Small very double green and white flowers—a curiosity! Scions obtained from U. S. D. A. in 1932.

SHIRATAMA (Zakura) — Single, pure white, early flowering, medium large, spreading tree. One of the best for this area. Scions obtained in 1929 from U. S. D. A. at Chico, Calif.

SHIROFUGEN (Victory)—Large double flowers, opening soft pink, turning white, and finally a deep cerise, giving a beautiful effect. Vigorous tree and profuse bloomer. Buds obtained in 1917 from original tree grown in Sacramento, Calif.

SHIROTAE (Mt. Fuji) — Moderately double pure white except for faint pink blush when first opening. A vigorous tree. 1920; scions from Rochester Park Department, N. Y.

SHOGETSU (Pine-Moon)—The most profuse blooming double, with pale flesh pink flowers in large clusters. Growth vigorous but spreading wider than high. Budwood obtained from U. S. D. A. at Chico in 1929.

TAIHAKU—Large single white flowers, contrasting with immature bronzy leaves. Budwood sent by Collingwood Ingram from England in 1929.

CAMPANULATA (Taiwanzakura)—Clear red, bell-shaped flowers, on rapid growing tall, slender trees. Not as hardy as other varieties, as it comes from the island of Formosa. Obtained in 1923 from Coolidge Rare Plants Gardens, Pasadena, Calif.

TAIZANFUKUN—Free blooming, small, very double pale pink flowers. Growth decidedly erect. Scion wood obtained from U. S. D. A. in Chico in 1920 under import number only.

TAKASAGO—Medium sized double pink flowers borne in compact clusters like snowballs. Growth very slow. Obtained in 1929.

TAKINIOI (Waterfall Fragrance)—Late single white, fragrant and free bloomer. Good grower. Budwood received from Rochester Park Department, N. Y., in 1919.

TANKO-SHINJU (Pink Pearl)—Free blooming, early, large semi-double flowers, soft pink in center and shading to deep pink at edges. Vigorous, spreading tree. Obtained from U. S. D. A. in 1920.

UKON—Free blooming double yellow flowers of good size. Moderately vigorous grower. In 1920 scions obtained from Tokyo Nursery, Oakland, Calif.

YAE KANZAN (Naden)—Similar to Kanzan but has about double the number of petals, making the flowers very full.

YEDOZAKURA—Good-sized deep pink flowers, usually in clusters of three. Moderate to slow-growing tree. Obtained from U. S. D. A. under import number only.

Weeping Varieties

BENI-SHIDARE (Park Weeping) (Pink Weeping) — Moderately small pink flowers on gracefully drooping branches. Although definitely weeping, tree gradually gains in height over the years. Found by W. B. Clarke in Japanese Tea Garden, Golden Gate Park, San Francisco, Calif.

ITO-SHIDARE (Eureka Weeping) — Flowers single, small and pale pink, before the leaves. Branches grow directly downward and it gains little height beyond the point it was grafted. Scion wood received from Arnold Arboretum in 1918.

KIKU-SHIDARE (Double Pink Weeping)—Medium-sized very double flowers, deep pink in color. Very free blooming. Semi-weeping only, but needs to be top-grafted.

SHIDARE - YOSHINO — Medium large, single pure white flowers, on branches growing directly downward. Scions received from U. S. D. A. at Chico, Calif., in 1925.

YAE-BENISHIDARE (Double Park Weeping)—Similar in every way to (single) Park Weeping except for the fully double pink flowers and deeper color. Very fine. Obtained in 1937 from Lewis & Simpson, Portland, Ore.

At the present time the nursery is only growing a limited number of varieties from the above list because, during World War II, it was impossible to have them propagated in commercial quantities. Up until very recently, understocks have still been scarce and only now are more varieties gradually being

added, as stocks become available. The present list of varieties being grown includes:

AKEBONO (Daybreak)

BENI-HOSHI (Pink Star)

SHIROFUGEN (Victory)

SHIROTAE (Mt. Fuji)

TANKO-SHINJU (Pink Pearl)

KANZAN (Kwanzan)

YAE KANZAN

CAMPANULATA (Taiwanzakura)

BENI-SHIDARE (Park Weeping)

YAE-BENISHIDARE (Double Park Weeping)

In general, flowering cherries do fairly well in this part of California, particularly around San Francisco Bay where the temperatures are not quite so extreme and where the air contains more moisture. Here in Santa Clara valley, flowering cherries are relatively happy if planted in a light loamy soil, well drained, but supplied with plentiful moisture during the growing season. We find that most varieties will grow according to their nature, as indicated in the list above, and bloom consistently, if properly cared for. One difficulty we noticed with some of the Weeping Cherries is that the bark of the branches at the crown occasionally sunburns rather severely and this leads eventually to permanent damage to the trees.

Our experience has been that these trees are much happier and certainly much better looking if not pruned regularly. As a matter of fact, the only pruning that has been recommended is to remove dead or injured branches and to shape the tree occasionally, when necessary. This, of course, does not preclude completely the picking of choice branches for decorative purposes, but it should be done with discretion, particularly on the smaller-growing varieties.

We have indicated on the above list those which under our conditions are slow-growing, and it would be interesting to make a comparison with other areas to see if this would hold true under different climatic and growing conditions. However, we do not have the data from other areas available so cannot make such a comparison.

✓ ✓ ✓

Let us learn upon earth those things that can call us to heaven.

—ST. JEROME

Fertilizer Applications by Leaf Spraying

RICHARD B. WALKER*

IT HAS been known for many years that plants can absorb sufficient amounts of the trace elements, such as iron or zinc, through the leaves if these elements are applied in sprays. Only within the last few years, however, has the ability of plants to absorb the major nutrients in a similar way been tested, but it is now well established that nitrogen, phosphorous, magnesium and other essential elements are readily taken in through the leaves. This has led to experimentation on the methods of entry of the fertilizer elements into the leaves, the best compounds to apply, most favorable rates and methods of application, possibility of injury to plants, and the effectiveness and economy of leaf spraying in comparison with ordinary methods of fertilization. The following paragraphs will give a summary of information on these different aspects.

Entry of minerals into the leaves: Since we have long considered the roots to be the organs of mineral absorption, it is surprising to learn that these nutrients enter leaf surfaces rapidly if applied in sprays. Entrance is generally more rapid through the lower leaf surfaces than the upper, probably because there are more pores or stomata on the lower side of the leaves of many plants than on the upper sides. However, over a period of weeks, if sprays are applied regularly, there is little difference in absorption between the two surfaces, indicating that the nutrients are absorbed through the waxy cuticle, even if more slowly. For practical purposes, spraying of lower surfaces has some advantage but is not essential for good results.

*Material used for spraying:*¹ Products of-

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1. Most garden stores now carry one or more of these preparations, and directions for their use are given on the labels. The Arboretum office has on file a list of the trade names of some of these products which are being widely sold. Urea retails for about 20c per pound; the complete fertilizers sell for about 25c to \$1.25 per pound; the micro-nutrient mixtures are 12c or more per pound depending upon the formula.

ferred commercially for foliar sprays are of three major types:

- (a) materials containing nitrogen only, usually in the form of the compound urea, which is a very soluble, odorless compound, non-corrosive to metal containers.
- (b) so-called *complete* mixtures, which consist mostly of soluble nitrogen, phosphorous, and potassium compounds, with traces of other elements such as magnesium and calcium present. Some organic fish preparations are also available which are satisfactory for spraying, and which are of the *complete* type.
- (c) trace element or micronutrient preparations, which contain iron, zinc, manganese, boron, copper, or molybdenum, or various combinations of these elements. Sometimes one or more of these is included in the *complete* mixtures.

Methods of application: These materials are dissolved in water and applied directly to the plant leaves by spraying or sprinkling. A major advantage of this method of fertilizing is that these compounds are compatible with most insecticides and fungicides, so that they may be added to the ordinary sprays and thus "feeding" can be done at the same time as the spraying against pests. The leaves should be sprayed until they begin to drip, preferably covering both surfaces. Any of the solution which reaches the ground is not wasted since it acts as ordinary fertilizer there. The effectiveness of absorption is increased by adding a teaspoon of synthetic soap powder and a teaspoonful of dry skim milk per gallon of spray, as these substances make the nutrients spread out evenly over the leaves and stick to them.

Urea and the complete mixtures are usually dissolved at the rate of 2-4 level teaspoonfuls per gallon of spray solution, if the plants are to be sprayed about every two weeks. This rate should be reduced if the spraying is to be done more often, or if the plants are particu-

larly tender (African violets and Gloxinias always require the use of quite dilute sprays). Spraying should be done regularly during the season of rapid growth, then tapered off or ceased entirely as late summer approaches.

The formulae for micronutrient mixtures vary so much that it is impossible to give any general recommendations for their use, but in any case the application must be very small, because these elements are toxic to plants if present even in slight excess. The manufacturer's directions should be carefully followed in using such products.

Precautions in use: Occasionally there is some difficulty in injury to plant leaves because of nutrient spraying. This usually is caused by use of too concentrated spray solutions or too frequent spraying, and the symptoms of injury are wilting or yellowing of the leaves. If such damage is detected at an early time, it can often be checked by flushing the leaves with water.

A few insecticides and fungicides, especially those containing dinitro or carbamate compounds, are incompatible with nutrient sprays. Exact information on particular compounds should be secured from the manufacturer if trouble is encountered.

Micronutrient sprays, especially if they contain boron, zinc, or copper, can be very toxic to plants if used in excessive concentrations. Deficiencies of these elements are very rare in gardens, anyway, so it is best not to use them without expert advice.

Results of leaf spraying: There is considerable evidence to support the belief that leaf "feeding" has little, if any, effect on plants grown on soils of high fertility, especially if fertilizers are added to the soil at intervals during the growing season. However, nutrient spraying has a number of advantages over ordinary soil fertilization. Perhaps the principal ones are that the spray nutrients are more quickly absorbed, especially in the spring when the soil is cold, that a number of elements such as iron and phosphorus often become precipitated in the soil and relatively unavailable to plants, and that spraying offers a method for supplying nutrients to plants

easily, frequently, and closely correlated with their growth rates. Also, it is often true that smaller amounts of fertilizer materials applied by spraying are as effective as larger applications to the soil, although soil treatments usually have a more lasting effect. It is probable that in most gardens optimum results can be obtained by a combination of soil fertilization and leaf spraying.

Foliage sprays have been successfully used on a wide variety of plants, of which the following are representative:

apples	delphiniums
celery	geraniums
citrus	Lantana
cucumber	oriental poppy
lettuce	ornamental shrubs
potatoes	roses
snap beans	shade trees
tomatoes	yew
chrysanthemums	

In summary, leaf sprays offer a convenient and effective method of supplying plants with mineral nutrient elements. Often this spraying can be combined with the customary spraying against pests. Although leaf "feeding" does not take the place of adequate soil fertilization, it is a good means of furnishing supplementary nutrients to plants when they are most needed. Gardeners who are not now using leaf sprays will find them of considerable aid in securing optimum plant growth.

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Copies of the Spring, 1952, ARBORETUM BULLETIN are in great demand—if you no longer need yours, please send it to the Foundation office.

✓ ✓ ✓

Here are sweet peas, on tiptoe for a flight
With wings of gentle flush o'er delicate white,
And taper fingers catching at all things,
To bind them all about with tiny rings.

—KEATS

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To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears and previously established \$2 memberships more than thirty days in arrears will be dropped and THE BULLETIN will be discontinued.

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I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

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All memberships are non-assessable.

Notes and Comment

In order to clarify the position of the Arboretum with regard to the proposed extension by the city of Empire Way along its western borders, and the possibility of the second Lake Washington bridge passing through or over the northern part, the following letter has been sent by Dean G. D. Marckworth, Chairman of the Arboretum Board, to Governor Langlie, Mayor Allan Pomeroy, the Director of Highways (Mr. W. A. Bugge), the chairman of the City Planning Commission (Mr. F. R. McAbee), and the Director of Planning (Mr. John D. Spaeth).

"In December, 1934, by an agreement signed between the Board of Park Commissioners of the city of Seattle and the Board of Regents of the University of Washington, the area known as Washington Park was granted to the latter institution for the purpose of forming and maintaining an arboretum. The future of the Arboretum is now in jeopardy.

"During the past eighteen years, including the war period, this original objective has been steadily pursued, with a greatly increased rate of development and improvement since the end of the war, despite the limitations of a very moderate biennial budget and consequent small staff. As a result the Arboretum has attained national status and is recognized as among the leading institutions of its kind in the country, particularly on the West Coast. The fact that the Director, Mr. Brian O. Mulligan, is President of the American Association of Botanic Gardens and Arboretums, and was invited to address the Advisory Council of the U. S. National Arboretum at their spring meeting in April in Washington, D. C., substantially confirms this statement.

"The collection of trees and shrubs now assembled and maintained in this varied area are, for an institution of its size, certainly among the most extensive in many groups of plants (*e.g.*, rhododendrons, camellias, magnolias, oaks, conifers, hollies, crab apples, etc.), not only on the Pacific Coast but throughout the country, and are continually being increased. As a source of horticultural

tural information, especially for residents of Seattle and its environs, the Arboretum is well recognized and frequently consulted. It is supported both by the Arboretum Foundation and by many garden clubs, and is enjoyed by the public in general who come in large numbers to see its seasonal displays, especially in spring and early summer. The plant collections are utilized for study material by University students as well as by garden club members and other individuals. It is also a considerable attraction for visitors from other states, and could well be a greater one.

“In short, it is used and appreciated not only by many citizens of Seattle, but by people throughout the state and elsewhere, and as its plant materials grow and develop its value will increase and its attraction become greater.

“The published plans of the City Planning Commission, ‘A Preliminary Thorofare Plan for Seattle,’ indicate that various parts of the Arboretum are proposed to be utilized in the city’s future thorofare system as follows:

“(1) Freeways ‘. . . The necessity for a freeway-type route between the University Campus and the central business district via the Arboretum . . .’

“(2) Major thorofares ‘. . . completion of the Empire Way extension . . .’

“This, planned to go northwards along the west side of the Arboretum, between Lake Washington Boulevard North and 26th Avenue North, may remove most of the land west of the Boulevard from the Arboretum, including the Pinetum at East Lynn Street, first planted in 1937.

“(3) Parkways ‘. . . routes near Union Bay and the Arboretum . . .’

“In addition, if the second Lake Washington bridge is built on the route recommended by the engineers to the State Toll Bridge Authority, the western approach would pass through the northern end of the Arboretum over Foster’s Island, and probably eliminate the major part of some five acres of important and promising plantings, including the large collection of crab apples, as well as the five or

six years’ work and expenditures in achieving them.

“All these proposals, which will have the effect of reducing the already too limited area of the Arboretum, are naturally viewed with great concern by members of the Arboretum Board, its administrative staff, the Arboretum Foundation officers and members, and many other persons who have watched the progress and development of this area over almost two decades into a distinctive and useful asset.

“It is possible that the present and greater potential value of the Arboretum, not only to Seattle and the University but also to the State and the Pacific Northwest generally, has not been sufficiently appreciated by those most concerned with the future shape of the city and its roadways, and we are therefore desirous of bringing this aspect of the planning proposals to your notice.

“We would also be happy to meet with members of the City Planning Commission, or any other group or individuals concerned, in order to be informed on and to discuss such plans for the future which may affect the Arboretum area.”

✓ ✓ ✓

The following recent contributions to the Arboretum are gratefully acknowledged:

Mercer Island Garden Club for maintenance of their sponsored project,	
“The Winter Garden”	\$150.00
Seattle Garden Club for maintenance of Azalea Way	375.00
Amateur Gardeners — proceeds from the Camellia Show held in April.....	155.00
“Else Frye” Unit No. 8 for purchase of books for the Arboretum Library....	75.00
“Sylvia Henry” Unit No. 15.....	10.00
“Woodway Park” Unit No. 22—proceeds from their April Plant Sale.....	204.65
City Wide Garden Club	40.00
“Diligent Diggers” Unit No. 37.....	40.00
“Pi-Sam-Be” Unit No. 43.....	15.00
“Gene O’Brien” Unit No. 3 for maintenance “Woodland Garden”.....	25.00

BOOK REVIEWS

"*Flora of West Virginia*" (Part I) by P. D. Strausbaugh and Earl L. Core. West Virginia University Bulletin, 273 pp., 1952. Sold for \$1.00 at the West Virginia University Bookstore, Morgantown, West Virginia.

FROM the one-page preface it can be learned that "This is the first fascicle of a proposed treatise of the vascular plants of West Virginia, which when complete, will present descriptions, illustrations, geographical data and other information particularly of local interest for the approximately 2,000 species found growing without cultivation in this state," and that "The nomenclature used and the sequence followed in this presentation is, in general, that used by M. L. Fernald in the 8th edition of Gray's Manual."

The work is illustrated by line drawings for each species, the drawings being grouped on each right-hand page with the corresponding text material facing. In this first part, the authors have covered the Pteridophyta, Gymnospermae and Monocotyledoneae in essentially the same way they were treated, taxonomically, by Fernald, without, however, providing keys to the subspecific taxa, which in some cases are several (chiefly Fernaldian). It is felt that the inclusion of such keys would have made the work more usable without increasing the overall length, since the text material falls far short of filling the average page.

The illustrations are excellent. In parts of the work, particularly significant diagnostic characters are labelled, a procedure that makes the drawings far more usable than the ordinary habit sketch. However, it seems lamentable that a little additional time was not taken to print the legends of the drawings uniformly. The free-hand lettering, although legible, varies greatly in style, in size and prominence, and specific names appear in both upper and lower case.

The observations concerning habitat, distribution, and economic importance of the various species are rather detailed and of great interest. For this reason, botanists will find the book filling a niche not touched by Gray's Manual.

The fascicle is presented in neat offset style which may partially account for the extremely low cost, another reason why every student of our native vegetation will want to acquire this work and wish the authors Godspeed in issuing the remaining sections of the West Virginia Flora.

C. L. HITCHCOCK

✓ ✓ ✓

The Lily Year Book, 1953. Royal Horticultural Society, London, S. W. I. \$2.40.

THE LILY YEAR BOOK compiled by the lily group of the Royal Horticultural Society is now available. The friendly discussion by experienced growers leads to valuable information from those with not only "first hand" but "first rate" knowledge. The succeeding shows annually reflect the value of these meetings. In the book much credit has generously been given to American hybridists and growers.

The primary article is a reprint of a lecture by Dr. S. L. Emsweller of the government station at Beltsville, Maryland. In his careful, scientific manner he takes up the propagation

of lilies (especially the Easter lily *longiflorum*) from scales, considering this a very rapid way of increasing good bulbs. In a lesser degree he has used this method on *speciosum* and *auratum* to prevent rotting, and root producing hormones to hasten growth. From 258 scales in eleven months he reported a yield of 1,676 bulbs. This is a really tremendous increase from the five bulbs from which the scaling was done. Leaf cuttings of *longiflorum* also produced bulbs, though most varieties did not do so.

He had also novel and quick methods of growing lilies from seeds. Since the work at Beltsville is for the promotion of new and better lilies adapted to the varying conditions of soil and climate in the U. S. A., the work includes cross-pollination, and also the preservation of pollen for considerable periods of time, making it possible to cross early sorts with late varieties. Some of the resultant hybrids are said to be of extreme beauty and hardiness. Especially is this true of *auratum* x *speciosum*. He spoke of some new white lilies obtained by back-crossing to *speciosum*, following the crossing of *auratum* x *speciosum*. The only variation from pure white was the pollen of the lilies. In some it was chocolate brown but varied in others to a pale gold, with flowers 9-11 inches in diameter facing outward. They are of such outstanding quality that they are being scaled to increase stocks rapidly.

Jan de Graaff of Oregon also spoke to the lily group in the past year. His lecture was on his work in the hybridizing of lilies, much along the lines pioneered by Dr. Griffiths of Bellingham and Luther Burbank of California. Crosses were made from *umbellatum*, *elegans* and *tigrinum*. From these have come the "Mid-Century Hybrids" with some named clones and others sold as a strain; all of this accomplishment with acres of gay, graceful bloom came from a handful of seeds in 1942.

He has been successful in making many other fine hybrids sold as strains, such as "Fiesta," and in improving candidum. Mr. de Graaff is a descendant of eminent Holland bulb growers, takes his work in stride and makes it sound easy indeed.

Mr. H. F. Comber has an article carefully compiled on lilies introduced since 1900. These are, of course, species, and it is indeed a long and impressive list. Lanning Roper follows with a descriptive list of hybrid lilies giving crosses, with time of both first flowering and exhibition.

One of the most interesting articles is "Mainly Auratums," by L. T. and D. H. Johnson of New Zealand. They, too, treat their subject as one not too difficult.

One feels, perusing the book, that growing lilies from seed is easy and rewarding, since bulbs from seed in fresh soil are disease-free. The few rules that need to be followed are in each year book of the lily group.

There are many subjects treated, many problems solved in the meetings of the experts; all are preserved in the year books for future reference.

Many photographs beautifully illustrate the 1953 book, and it is not only educational but extremely interesting and readable.

SALLY BUNGE

ARBORETUM NOTEBOOK

This department is published for correspondence and pertinent comments by experienced growers on interesting plants and their culture. We solicit your questions but space limitation necessitates the publishing of only such answers as we deem of general interest.

GARDEN HINTS . . .

June

The Fuji cherry, *Prunus incisa*, should be pruned after blooming. This will increase its usual profuse output of beauty.

The climbers should be watched carefully during the summer. All new growth should be carefully trained over the surface they are to cover. Shoots should not overcrowd themselves and all weak shoots should be cut out entirely.

All evergreens should be kept well-watered, especially those that were transplanted within the last year. Stakes for perennials should be in place now, ready to tie up new shoots.

When cutting roses for the house one should not hesitate to cut long stems. This keeps the bush in good shape and encourages new growth which will bloom later.

July

When a plant is ailing look to the roots. Nine times out of ten something is wrong with the soil or drainage. The soil may be sour or contain some harmful element.

May and June flowering Irises have finished blooming now and should be divided and transplanted. They appreciate a well-drained, sunny location. *Iris tectorum* is seldom seen. It is the iris grown in China on the roofs of houses. The blossom, about four inches across, is a pleasing shade of blue with dark blue flecks. It blooms in May.

The Maxwell lily is one of the less temperamental of garden lilies. It is a turk's cap lily and sometimes grows to nine feet in height; in color "a most intense sealing-wax scarlet." The Royal Horticultural Society has given it many honors.

One of the greatest faults of small gardens may be the tendency to grow everything that is found in large gardens. When visiting gardens in July note that simplicity is surely the most charming feature of the gardens you admire the most.

August

Propagation by cuttings and layers is the major project in August. From shrubs take ripened, short shoots that have not blossomed this year. Geranium cuttings like to be placed around the edge of five-inch pots in sandy soil. Many alpine or rock-garden plants may be increased by cuttings taken in August, as well as lavender and heathers.

August is an excellent time to appraise your garden and make new plans for next year. A gardener's greatest pleasure is to plan "an improvement" in some area, great or small. How uninteresting a garden would be that lacked an opportunity for improvement or development. "An enthusiast's garden is never finished."

The Stewartias are shrubs of distinction which bloom in August. They are unquestionably choice when well grown in a sheltered, moist spot.

One of the greatest joys of the midsummer garden is the host of night-scented flowers. Night-scented stock is one of the best known but a list should include lilies, evening primroses, *Nicotiana affinis* (the tobacco plant), *Jasminum officinale* and the little wild Twin Flower.

✓ ✓ ✓

PLANT COMBINATIONS . . .

Blooming at the same time, heather-like *Daboecia polifolia* and *Anemone japonica alba*. Heather "H. E. Beale" and *Anemone japonica rubra*.
E. D. H.

Azaleas with a ground cover of early heathers. The heathers are nearly out of bloom, if not quite, when the Azaleas begin to bloom.

Rhododendron luteum and *Helleborus corsicus*. If the Hellebores grow too tall they may be pegged down. Often the blooms are so heavy they fall with their own weight to make a ground cover.

Rhododendron poukhanense with *Erica carnea* and *Megasea* in the foreground. All this with a pink-flowering cherry in the background.
G. W. C.

The Funkias make a beautiful ground cover for the lily bed.

✓ ✓ ✓

Of the several winter-blooming shrubs and plants, my greatest pride and joy has been the winter-blooming *Iris stylosa*. Not many dealers offer it for sale, I suppose because not many gardeners know the variety and there isn't the demand for it. My original plants came from a grower in Oregon. The variety is the common lavender one. There are several other varieties listed, white, pink and orchid. In my garden *I. stylosa* starts blooming in November, with dozens of blooms in December and January and a scattered few up to April. They seem to do best planted at the foot of a rockery wall, southern or western exposure. I use plenty of compost and lots of bonemeal in preparing the bed. They resent moving or dividing. A light sprinkling of lime once a year (late winter or early spring) and a rest period in August (with water withheld) is about all the attention they require. A very light feeding of fish fertilizer in early September made the stems much longer. Slugs are very fond of the buds and blossoms but are kept under control by the use of any slug bait containing metaldehyde.

IDA B. MILLER

✓ ✓ ✓

Somewhere I read that *Schizophragma hydrangeoides* can be grown as a shrub; it makes a rounded mound and in bloom is perfectly beautiful.

It is most important to prune the flowering cherries properly—opening them in the center

so that each branch flings its blossoming into the air. I think my favorite is *Prunus subhirtella* Whitcombi.

ELSE FRYE

✓ ✓ ✓

Three fine shrubs for the rock garden: *Da-boecia azorica*, eight to ten inches high with crimson bells. This is rather difficult but worthy of effort. *Gaylussacia brachycera*, twelve inches high from Carolina, and recently found in Pennsylvania. It is evergreen and belongs to the *Vaccinium* family. *Forsythia viridissima bronxensis*, a charming miniature Forsythia only twelve inches high.

JESSIE GRAY

✓ ✓ ✓

A trip to San Mateo last week has caused me to view my garden through dark glasses. One garden and house tour in California winter weather disclosed a rather indecent disregard of seasons. Winter heather made a background for a rather sickly foliated but brilliantly flowered red rhododendron crowded between six-foot geraniums overrun with huge summer stock. My efforts to refocus my color sights in my own garden reflect the following. A bed of *Rhododendron Keiskei* drifts into a series of yellow polyanthus primroses. *R. racemosum*, this year, has a carpet of Clark's blue primroses. A great variation came from seed, each lovely in its own shade. In another spot *R. racemosum* has *P. Wanda* as its floor with *R. cantabile* bringing up the purple in the foreground. The primroses have bloomed continually all winter as has the *autumnalis* cherry on the bank. Further back the drift of Springwood heather is backed by *E. carnea* making a vivid splash (or so I thought before my contact with California brilliance). *R. ciliatum* is very pink-tipped and partially open against the grey concrete wall and farther along *Clematis Armandi* spills white buds over its own green blanket. All the *Pieris* have outdone themselves this spring as have the new growths on the *Photinia glabra*. Aside from our stationary color, the garden is a moving mass of feathered color. Our guest list included Oregon juncos, our regular boarders; the Towhee pair; a purple finch and at this very moment the varied Thrush is passing outside our windows and Mr. and Mrs. Quack, our pet mallards, are begging for food.

W. B.

✓ ✓ ✓

List of Plant Names

(Continued from Spring, 1953)

Jacaranda	Brazilian name
Jacobinia	probably a personal name
Jacquemontia	after Victor Jacquemont, a French naturalist
japonicus	Japanese
Jasione	an ancient name—no application
Jasminum	an Arabic name
jasminiflorus	jasmine-flowered
javanicus	of Java
Johnstoneanum	after Mrs. Johnstone, Manipur
Jeffersonia	after Thomas Jefferson
Jovellana	Spanish personal name, Jovellanos
jubatus	crested, with a mane

Jubaea
jucundus
Juglans
jugosus
junceus
junicifolius
Juncus
juniperifolius
juniperinus
Juniperus
Jussiaea
Justica

Kadsura
Kalanchoe
Kalmia

kamtschaticus
Kanehirai

kashmirianus
kasoense
Kawakamii

Keiskei

keleticum
Kendrickii

Kennedya

Kentia
Kerneria

Kerria

Keteleeria

Keysii
Kigelia
Kirengeshoma
Kitaibelia
Kniphofia

Kochia

Koeleria
Kolkwitzia

kongboense
Kotschyi
Krameria

Kuhnia

Kunzea

kwangtungense
Kyawi

labiatus
labilis
labiosus
labrosus
laburnifolius
Laburnum
lacerus
Lachenalia
laciniosus
lactatus
lacteus
lacticolor
lactiflorus

after Juba, King of Numidia
agreeable, pleasing
ancient Latin name
joined, yoked
juncus-like, rush-like
rush-leaved
classical name, to join
juniper-leaved
juniper-like
ancient Latin name
after Bernard de Jussieu
after James Justice,
a Scotch gardener
Japanese name of plant
Chinese name for plant
after Peter Kalm,
Swedish botanist
of Kamchatka
after Ryoza Kanehira,
Japanese botanist
of Cashmere
from Kaso, Assam
after T. Kawakami,
collector in Formosa
after Ito Keisuke,
Japanese botanist
charming
after Dr. Kendrick,
friend of Nuttall
after Kennedy of nursery
firm, Kennedy and Lee
after William Kent
after Johann von Kerner,
Prof. of Botany in Germany
after William Kerr,
plant collector in China
after Jean Keteleer,
a French nurseryman
after Mr. Keys
from a native name
Japanese name
after Paul Kitaibel, botanist
after Johann Kniphof,
Prof. of Medicine, Germany
after W. D. J. Koch,
Prof. of Botany
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after Richard Kolkwitz,
Prof. of Botany, Berlin
from Kongbo, S. E. Tibet
after an Austrian botanist
after J. G. and W. H. Kramer,
Austrian botanists
after Dr. Adam Kuhn, early
botanist in Philadelphia
after Gustav Kunze,
botanist and physician
from Kwangtung
after Maung Kyaw,
a Burmese collector
lipped
slippery
lipped
large-lipped
laburnum-leaved
ancient Latin name
torn
for Werner de Lachenal
much torn
milky
milk-white
milk-colored
flower milk-colored

Camellia Diseases

(Continued from Page Seventeen)

have already done so, the upper three inches of soil or mulch should be removed and discarded. When you buy camellias from other states, it may pay to obtain either bare-rooted plants or to discard the upper two to three inches of soil on balled plants.

Additional information is contained in Oregon Circular of Information 474 on "Camellia Flower Blight," by Young and Milbrath, available from the Bulletin Office, Oregon State College, Corvallis.

Root Rot

This is another disease that has not yet been found in Washington but it is serious on camellias in the Gulf States. The fungus is widespread over most of the United States on many different hosts. Therefore we should be on the lookout for it.

The roots are rotted, resulting in a gradual wilting, yellowing and death of the leaves on one or more branches. Affected leaves may fall prematurely. Small plants and cuttings succumb more rapidly than older plants. Varieties differ in their resistance, the common Pink Perfection being quite susceptible. Diseased plants should be discarded and the soil sterilized with formaldehyde before planting. Poor drainage favors the fungus and should be avoided.

Algae Spot

This is not strictly a disease but merely a layer of algae growing on the surface of leaves or stems. The color varies from green to brown and the area may be small or large. If it is a

problem, spray once or twice with a copper-containing fungicide. Bioquin and lime-sulfur also have been reported promising in Oregon.

Sooty Mold

Camellia leaves are sometimes partially or entirely covered with a dark soot-like mold. This is a fungus growing on the excretions of an insect—the soft brown scale. Control of the insect will give control of the mold. Dr. E. P. Breakey recommends spraying in February or March with six tablespoons of a summer oil emulsion plus one teaspoon of nicotine sulfate. He has found that this type of spray controls the algae on holly leaves and believes it might do likewise on camellias.



Spanish Journey

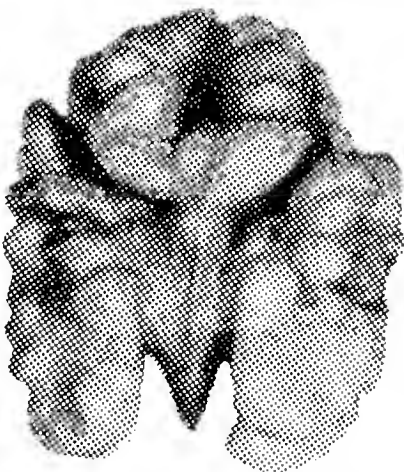
(Continued from Page Three)

on church towers, nor hear the grape gatherers cry their greeting from the vineyards. There is no space.

Perhaps then it is better to stay in the garden of the Generalife a moment longer and sense that quality which is said to be the real test of an old garden—the serenity of an ancient civilization uncolored either by melancholy or the insistence of decay.

We might, too, remember Hilaire Belloc who contends there is no other work of man, other than a fountain, "which is so simple and so single, so satisfying, so complete, so full and so successful a challenge to the shadow of mortality and to the burden of change. For though the fountain is ever in movement, it is ever one in strength and character; young when we were young and still young when we are old."

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John and William Bartram

(Continued from Page Five)

down the day's events in a record which in book form has become a much sought-for collector's item. He sometimes joined a company of traders, but he was mostly alone, sailing up the Florida rivers, mooring his boat at night, and spreading his skins under some oak trees. He frequently lists the fine plants he has seen during the day. He tells of catching and roasting his trout and of stewing their heads in orange juice served with boiled rice. He realistically describes his experiences; of being awakened at night by the hooting of owls, of the ponderous tread of bears and other wild animals. He tells of his encounters with rattlesnakes, and his description of the battle of the alligators and his participation in it exceeds in horror any imaginative thriller.

In 1791 William published his "Travels Through the Carolinas, Georgia and Florida," together with an account of the Indians he encountered on his travels. The book was well received and reprinted twice in England. It has been described as one of the great source books of American history and a classic in the literature of travel and natural history. Published in the time of Emerson and Carlyle, the latter called Emerson's attention to the diary. Coleridge wrote that it was a work of high merit in every way. Wordsworth also held the "Travels" in high esteem. As one author expressed it, "It is pleasant reading, being the artless account of an unhurried wanderer through fields and forest, who made friends with every flower and tree, every bird

and insect and whose heart was one with nature itself."

John Bartram died in Philadelphia, September, 1777, at the age of seventy-eight. He was an original member of the American Philosophical Society, his name following Franklin's at the head of the roll. It is a matter of regret that neither John nor William Bartram's name was given to at least one of the lovely trees or shrubs they discovered and disseminated. *Bartramia* is the name given to a moss growing in the Berkshire Hills of Massachusetts, the only instance where the use of the name could be found.

William Bartram, an acknowledged botanist, lived with his brother John to an age of eighty-five years and his interest in horticulture and other natural sciences continued up to the time of his death. He was appointed Professor of Botany in the University of Pennsylvania but ill health prevented his acceptance of the post. As in the case of his father, his explorations brought to light hundreds of new and interesting plants. He made the most complete list of American birds up to his time.

The Bartram Garden descended to other members of the family but as time passed the fate of the Garden became dubious. Finally in 1882 Professor Charles S. Sargent of the Arnold Arboretum raised enough money to buy the Old Garden. In 1891 the city of Philadelphia took possession of the property and placed it under the Park System. It is now well kept and is worth a visit should one be in that city.

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Some Plants Discovered by the Bartrams

The *Gordonias*, *Lasianthus* and *alatomaha*; the first an evergreen tree up to seventy feet in height, having white flowers with petals spreading out like a wild rose, often two to three inches across. The flowers open in July and continue several weeks. *G. alatomaha* (commonly called *Franklinia alatomaha*) is a large shrub or a small tree rarely over twenty or twenty-five feet in height. It is deciduous and is outstanding for its splendid autumn color. The flowers are white and bloom in September. In 1765 William Bartram found the tree growing along the Alatomaha River and in 1773 collected seeds. Specimens were sent to the garden in Philadelphia and from there it was introduced into cultivation. The tree has never since 1790 been found growing in the wild although careful search has been made to rediscover it. Those now in gardens have all been propagated from those sent to the Bartram garden. William says in naming it, "I presently found striking characteristics abundantly sufficient to separate it from that genus (*Gordonia*) and to establish it as the head of a new tribe, which we have honored with the name of the illustrious Dr. Benjamin Franklin, *Franklinia alatomaha*."

Many other equally beautiful and interesting trees are described and their habitats mentioned in the Diary: Magnolias, oaks, evergreen and deciduous; nut trees (walnuts, hickories and pecans); ashes and elms, dogwoods, Liquidambar, maples, Liriodendron, Tiliac, Nyssas, and many others including the evergreens.

Among the shrubs listed are the eastern Azaleas and Rhododendrons, Kalmias, Syringas (*Philadelphus*), Viburnum, *Styrax*, Robinias, *Calycanthus*, *Sassafras*, *Halesia*, Stewartias, Hydrangeas (including *H. quercifolia*, the oak-leaved Hydrangea), several *Pieris* and many others, all beautiful and worthy of a place in our gardens, parks and other public places. Practically all of these beautiful trees and shrubs, discovered and introduced into cultivation by the Bartrams, can be found growing in the gardens of the Pacific Northwest or in the Arboretum in Seattle.

The American Philosophical Society of Philadelphia, of which John Bartram was an original member, feels the splendid and intelligent work of the father and son are not generally known and appreciated and is planning a work that will cover the lives and works of these two great botanists and plant explorers.

SOURCES ON LIVES OF THE BARTRAMS

DARLINGTON, WILLIAM. Memorials of John Bartram and Humphrey Marshall; with notices of their botanical contemporaries. Lindsay and Blakiston, 1849.

SHORT, THOMAS. A treatise on such physical plants as are generally to be found in the fields or gardens in Great Britain: containing a particular account of their nature, virtues and uses. 3d ed. With a preface by Mr. John Bartram, botanist of Pennsylvania. London printed; Philadelphia reprinted and sold by B. Franklin and D. Hall, 1751.

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FOX, RICHARD HINGSTON. Dr. John Fothergill and His Friends. Macmillan, 1919.

BROOKS, VAN WYCK. The World of Washington Irving. Dutton, 1944.

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Evolution of Modern Design

(Continued from Page Nine)

golian invaders take this same Persian garden design into India. And with the Mogul dynasty in India there flowered a period of great landscape magnificence as shown by the gardens of the Taj Mahal. There, according to Hubbard and Kimball, lies the reason for the close resemblance between the Alhambra and the Taj Mahal.

The Mogul garden, as always in a dry, hot climate, was characterized by use of water, shade, flowers and fruit. But, unlike Spain, the arrangement of these, such as the grouping of trees, had symbolism. These gardens were enclosed not for the sake of defense but for privacy, repose, magnificence and formality. The whole scheme of buildings and gardens were designed as one. The scheme was made to be lived in and different portions were arranged for enjoyment at different times of the day. In the day one could walk in a water-cooled central pavilion, then, in the afternoon, into the deep shade of a grove of

planes and, in the evening, into a moonlit court, full of gleaming white flowers.

In India they often built on hillsides because they wanted waterfalls and a succession of terraces. This change of elevation gave additional life and a cooling effect in the splashing of cascades of water.

The Chinese garden which is so closely linked with their home goes back farther than any culture I have mentioned. The court has been an integral part of their lives for centuries. I would like to quote from "*Chinese Houses and Gardens*," by Henry Inn . . . "In some cases the garden even surpasses the house in beauty and in importance. . . . it is the flowering of a civilization which cherishes the ideal of fellowship between nature and man. The garden is a place where he laughs, sings, picks flowers and chases butterflies and pets birds, makes love with maidens and plays with children. It is in the garden that man discovers himself."

The influence of Chinese culture in the 18th century English gardens has been mentioned. Their naturalistic gardens, bridges, and summer houses were widely copied. Today we are indebted to the Chinese for many plants which we enjoy in our gardens. There is also, in modern gardens, a return to the use of gates and entrances with Chinese design.

The Japanese, too, employed landscape design many centuries earlier than landscape schools of Western Europe. They found inspiration in nature but in a different sense than the picturesque age in England. Japanese styles are an expression of a racial feeling and a reverence for nature which has become symbolized and conventionalized for more than 1000 years. They do not indiscriminately copy nature—they represent an effect of nature. They prune trees into shapes not natural but supposed to represent more typically the character of the particular plants. Symbolically, certain arrangements of rocks represent a brook, and so on. In Japanese landscape, like our modern landscape of today, there is a close study of topography and the life, means and tastes of the owners.

So, in Japan, China, India and in Spain I

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feel we do find true inspiration for our contemporary patio-type landscaping. It was this aspect which I found most interesting in my research. For my original reason in selecting the subject was to trace the forerunners of our style of landscape design which is now in use.



As the wind, wandering over the sea, takes from each wave an invisible portion . . . so the air lingering among the woods and hedges—green waves and billows—became full of fine atoms of summer.

—RICHARD JEFFERIES



You Can Grow It From a Cutting

(Continued from Page Fifteen)

- Callicarpa*—sand; Hormodin.
Calluna vulgaris and vars.—sand-peat; Hormodin. Possibilities extend over long period.
Chamaecyparis Lawsoniana and vars.—sand-peat; Hormodin.
Tsuga species and vars.—sand-peat; Hormodin.
Sciadopitys verticillata—3 parts sifted cinders and 1 part peat, then transplanted to sand and peat; Hormodin.
Taxus vars.—sand or sand-peat; Hormodin.
- FEBRUARY**
Abies species in peat-moss or sand-peat; Hormodin.
Arctostaphylos uva-ursi—multiple terminal cuttings—sand-peat; Hormodin.
Buxus sempervirens—sand; Hormodin.
- MARCH:**
Vitex—sand-peat; Hormodin.
Weigela—sand-peat; Hormodin.
- APRIL:**
- MAY**
Corylopsis species with basal cut—sand-peat; Hormodin.
Forsythia—from May until September; sand; Hormodin.
Syringa (lilac)—6-inch shoots with basal cut, inserted at an angle—sand; Hormodin.
- JUNE:**
Acanthopanax Sieboldianus—sand; Hormodin.
Cornus florida—sand.
Cotoneaster spp.—sand; Hormodin. Rooting possibilities extend over a long time.
Cydonia japonica vars.—sand; Hormodin.
Enkianthus spp.—sand-peat; Hormodin.
Hedera Helix vars.—growing tips of 10-12 inches; sand or sandy soil; Hormodin.
Malus—some species and vars.—sand; Hormodin.
Physocarpus opulifolius—sand-peat; Hormodin.
Prunus spp.—in general, best if taken immediately after growth has stopped; Hormodin.

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Viburnum spp.—sand-peat, sandy soil; Hormodin.

JULY:

- Camellia japonica* vars.—sand-peat; Hormodin. Rooting possibilities extend over a long time.
Chiogenes hispidula—sand-peat.
Cornus kousa—sandy soil; Hormodin.
Deutzia—sand; Rootone or Hormodin.
Erica vars.—sand-peat; Hormodin. Rooting possibilities extend over a long time.
Hydrangea quercifolia—sand; Hormodin No. 2.
Kerria japonica—sand-peat; Hormodin.
Kolkwitzia amabilis—sand; Hormodin.
Leucothoe Catesbaei—sand-peat; Hormodin.
Liquidambar formosana and *L. orientalis*—half-ripened wood with heel—sand.
Ginkgo biloba—sand; Hormodin.
Magnolia—deciduous species—with heel—sand; Hormodin.
Myrica Gale—sand-peat; Hormodin.
Osmanthus species—sand; Hormodin.
Symplocos species—sandy soil; Hormodin.
Oxydendrum arboreum—short side-shoots with heel—sand-peat; Hormodin.
Pachysandra terminalis—sand; Hormodin.
Parrotia persica—sand-peat; Hormodin.
Philadelphus vars.—sand-peat; Hormodin.
Potentilla fruticosa—sand.
Rhus spp.—sand.
Spiraea—sand-peat; Hormodin.
Stephanandra spp.—sand.
Styrax japonica and *S. Obassia*—sandy soil; Hormodin.
Tamarix spp.—sand.
Thujaopsis dolabrata—sand; Hormodin.
Wisteria—sand-peat; Hormodin.

AUGUST:

- Abelia grandiflora*—sand; Hormodin.
Cytisus spp. with heel—sand; Hormodin.
Photinia serrulata—sand; Hormodin.
Pieris japonica and *P. floribunda*, with basal cut ¼ inch below node—sand-peat; Hormodin.
Vaccinium Vitis-idaea—sand-peat or peat alone.

SEPTEMBER:

- Actinidia arguta*—sand; Hormodin.
Berberis spp.—sand or sandy soil; Hormodin.
Ceanothus spp.—sand; Hormodin.
Epigaea repens—current year's growth with base of previous year's growth—sand-peat or peat; Rootone.
Genista spp.—sand.
Kalmia polifolia vars.—sand-peat.
Photinia glabra—short side shoots with heel—sand; Hormodin.
Pyracantha—sand-peat.

OCTOBER:

- Chamaecyparis Lawsoniana* and vars.—sand-peat; Hormodin.

Chamaecyparis obtusa and vars.—sand-peat; Hormodin.
Elaeagnus pungens—sand; Hormodin.
Genista pilosa—sand.
Pachistima Canbyi and *P. Myrsinites*—sand-peat.

NOVEMBER:

Cedrus libani—not easily propagated—sand-peat.
Chamaecyparis pisifera vars.—sand-peat; Hormodin.
Daphne Laureola—sand; Hormodin.
Daphne odora—sand; Hormodin.
Kalmia latifolia—cinders and peat; bottom heat of 80 degrees.

DECEMBER:

Picea Abies and vars.—sand-peat.
Picea glauca var. *conica*—sand-peat; Hormodin.

Spring Plantings in Arboretum

Because of the continued cool and showery weather this has proved one of the best planting seasons of recent years.

Many and various young trees and shrubs have been transferred from nurseries and lath houses to permanent sites all over the Arboretum, and most have apparently become established.

Among them are 37 magnolias of about 20 kinds, 45 plants of Cotoneasters, eight species of maples, four of *Amelanchier*, eight of shrubby *Cornus*, 20 kinds of Viburnums totaling 47 plants, and so on.

Some, of more than thirty genera, represent the first planting of a particular species in the Arboretum. In most cases these plants have been raised here from seeds. Examples are: *Acer cissifolium* and *A. Hersii*; the cut-leaved *Alnus glutinosa* var. *imperialis*; the white form of the redbud, *Cercis canadensis alba*; *Cyrilla racemiflora*; *Fraxinus Mariesii*; the Japanese raisin tree, *Hovenia dulcis*; an incense cedar,

Libocedrus chilensis, and the evergreen *Nothofagus Dombeyi* from Chile; Tupelo or Sour Gum, *Nyssa sylvatica*; *Pinus ayacahuite* from Mexico and *P. yunnanensis* from S. W. China; *Quercus acutissima* from eastern Asia, and others. Great credit is due to the nursery foreman and his assistant for achieving so much in three months with little other assistance.

New or Unusual Plants in the Arboretum

(Continued from Page Thirteen)

between *C. populifolius* and *C. ladaniferus* var. *albiflorus*, the white flowered gum Cistus found in Spain and Morocco; both these plants are growing in the Arboretum. The form *maculatus*, however, was the product of an artificial cross between *C. populifolius* var. *lasiocalyx*—a variety with larger flowers than the type—and *C. ladaniferus*, the spotted form of the gum Cistus, made in the garden of the late Sir Oscar Warburg, near Epsom, Surrey, England, in 1931 or 1932. He exhibited this hybrid in London in late June, 1936, and received the Royal Horticultural Society Award of Merit for it.

The photograph well depicts the form of the bush and the shape of the leaves, with their undulate margins; the flowers are produced in clusters of three, each one being 3½ inches in diameter, with a yellow zone at the base of the petals surmounted by the very prominent maroon blotch. For sunny situations on light soils this promises to be an excellent shrub of the highest quality in its race.

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